UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,268	12/09/2003	Luying Sun	4920-104 US	4722

7590 05/10/2007

Patrick H. Higgins
Mathews, Collins, Shepherd & McKay
Suite 306
100 Thanet Circle
Princeton, NJ 08540

EXAMINER	
WEINER, LAURA S	

ART UNIT	PAPER NUMBER
1745	

MAIL DATE	DELIVERY MODE
05/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,268	SUN, LUYING	
	Examiner	Art Unit	
	Laura S. Weiner	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☒ Claim(s) *22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12-2003*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of an electrolyte species comprising at least one cyclic carbonate as a first solvent and an alkyl radical having the chemical structure of MeO-CH2-CH2-CN or EtO-CH2-CH2-CN in the reply filed on 3-27-07 is acknowledged.

Claim Objections

2. Claim 22 is objected to under 37 CFR 1.75(c) as being in improper form because claim 22 is an improper multiple dependent claim . See MPEP § 608.01(n). Accordingly, the claim 22 is not been further treated on the merits. Claim 22 depends on the battery of claim 17 and the electrolyte of claim 1. Claim 22 can only depend from 17 or claim 1.

Claim Rejections - 35 USC § 112

3. Claims 7, 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is rejected because of the phrase "wherein the linear carbonate is ... ethylene carbonate, propylene carbonate". EC and PC are not linear carbonates.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-7, 16-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Toriida et al. (JP 2000243444, translation and abstract).

Toriida et al. teaches a nonaqueous electrolytic solution comprising a cyanoethyl group having the formula RO(R'O)nCH2CH2CN where R is a hydrogen, etc.; R' is an alkylene group of 1C to 4C and (n) is an integer of 0-30. Toriida et al. teaches in [0017] of patent that CH3OCH2CH2CN, CH3CH2OCH2CH2CN, etc. is used. Toriida et al. teaches in [0003], that the electrolyte comprises a carbonate compound and mixed electrolytes such as LiBF4, LiPF6, LiAsF6, LiClO4, LiCF3SO3, etc. Toriida et al. teaches in [0010], that the solvent consists of a compound containing the cyanoethyl group and an annular and/or a chain carbonate expressed as Formula 2a or 2b. Toriida et al. teaches in [0019], that the cyano ethyl group is present 0.01-99.5% of the solvent. Toriida et al. teaches in [0028], that the salt can also include LiN(SO2CF3)2 and that the salts may be a mix and use two or more sorts. Toriida et al. teaches in [0034-0037], that the negative electrode can be a carbon material such as graphite and the positive active material can be LiCoO2, LiMnO2, etc. and the separator is a porous film.

6. Claims 1, 3-7, 16-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (JP 2000077096, translation and abstract).

Kobayashi et al. teaches a positive electrode containing a lithium content multiple oxide, the negative electrode contains a carbon material and an electrolyte. The nonaqueous solvent comprising R-(OCH2CH2). The salt comprises LiPF6, LiBF4, LiClO4, LiN(SO2CF3)2, LiN(SO2C2F5)2, etc. The electrolyte comprises two or more solvents such as EC, PC, etc. Kobayashi et al. teaches in [0015], that the electrolyte comprised LiBF4, 60 capacity % of a cyanoethoxy compound and 40 capacity% of EC.

7. Claims 1, 3-4, 5-7, 16, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Jinno et al. (JP 08321312, abstract).

Jinno et al. teaches an electrolyte comprising LiPF6 dissolved in EC, PC or BC and contains 1-20 vol% of an additive selected from 3-methoxy propionitrile, etc.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.. Claims 8-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Toriida et al. (JP 2000243444, translation and abstract) or Kobayashi et al. (JP 2000077096, translation and abstract).

Toriida et al. teaches a nonaqueous electrolytic solution comprising a cyanoethyl group having the formula RO(R'O)nCH2CH2CN where R is a hydrogen, etc.; R' is an alkylene group of 1C to 4C and (n) is an integer of 0-30. Toriida et al. teaches in [0017] of patent that CH3OCH2CH2CN, CH3CH2OCH2CH2CN, etc. is used. Toriida et al. teaches in [0003], that the electrolyte comprises a carbonate compound and mixed electrolytes such as LiBF4, LiPF6, LiAsF6, LiClO4, LiCF3SO3, etc. Toriida et al. teaches in [0010], that the solvent consists of a compound containing the cyanoethyl group and an annular and/or a chain carbonate expressed as Formula 2a or 2b. Toriida et al. teaches in [0019], that the cyano ethyl group is present 0.01-99.5% of the solvent. Toriida et al. teaches in [0028], that the salt can also include LiN(SO2CF3)2 and that the salts may be a mix and use two or more sorts. Toriida et al. teaches in [0034-0037], that the negative electrode can be a carbon material such as graphite and the positive active material can be LiCoO2, LiMnO2, etc. and the separator is a porous film.

Kobayashi et al. teaches a positive electrode containing a lithium content multiple oxide, the negative electrode contains a carbon material and an electrolyte. The nonaqueous solvent comprising R-(OCH2CH2). The salt comprises LiPF6, LiBF4, LiClO4, LiN(SO2CF3)2, LiN(SO2C2F5)2, etc. The electrolyte comprises two or more solvents such as EC, PC, etc. Kobayashi et al. teaches in [0015], that the electrolyte comprised LiBF4, 60 capacity % of a cyanoethoxy compound and 40 capacity% of EC.

Since Toriida et al. or Kobayashi et al. teaches the same electrolyte comprising an electrolyte salt such as LiPF6, LiBF4, etc., at least one cyclic carbonate and a second solvent being at least one nitrile compound such as CH3OCH2CH2CN,

CH3CH2OCH2CH2CN, then inherently the same electrolyte having the cited ionic conductivity or the cited weight loss or freezing point of the electrolyte or the same boiling point or flash point of the nitrile compound must also be obtained.

In addition, the presently claimed property of an electrolyte having the cited ionic conductivity or the cited weight loss or freezing point of the electrolyte or the same boiling point or flash point of the nitrile compound would have obviously have been present once the Toriida et al. or Kobayashi et al. product is provided. *In re Best, 195 USPQ 433 (CCPA 1977).*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S. Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Laura S Weiner
Primary Examiner
Art Unit 1745

May 1, 2007